CENTRAL INTELLIGENCE AGENCY

SECRET

COUNTRY East Germany

REPORT

SUBJECT Definition of Terms Used in Technical Reports on German Electronic Components

DATE DISTR. 30 January 1962

NO. PAGES 1

DATE OF INFO.

PLACE & DATE ACQ

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definitions of terms used in technical reports on German electronic components including Molekular-Bausteine and materials used in semi-conductor components.

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Molecular Components (Molekular-Bausteine)

Molekular-Bausteine are micro units (Mikroelemente); that is, micro components for electronic purposes. They are known in the English language as "molecular-components" and "molecular-circuits." They are produced by means of diffusion of micro-semi-conductors in direct contact with coupling elements (for example, micro layer resistances, micro tantalum condensers) by charging (Beschichtung) and/or electroplating. The molecular growing method can also be used for production.

A molecular component, for example, can be an amplifier.

Materials for Semi-Conductor Components

Until November 1961, approximately 80% of the raw materials for the production of semi-conductor components was imported [redacted] 50X1-HUM
It is not to be expected that chemical and metallurgical enterprises of East Germany can be modified on short notice to produce these raw materials with the requisite extreme high degree of purity, even if an effort is made to achieve this. The necessary special metallurgical and chemical equipment and experienced, qualified workers are lacking. So far, all very high-quality semi-conductor components are produced exclusively from imported materials (high-frequency transistors, maximum-power low-frequency transistors, high-power rectifiers, high-frequency diodes, Zener diodes, photo diodes and others).

In particular, these raw materials are:

Silicon (Si, valence 4, atomic weight 28.06)

Silicon oxide is mixed with fused aluminum or aluminum oxide. The silicon, which crystallizes while cooling, is dissolved in thinned acid of aluminum and thus obtained in crystal form.

Germanium (Ge, valence 2 and 4, atomic weight 72.60)

Germanit is imported [redacted] and refined to 50X1-HUM
yield germanium. The 4% to 7% germanium contained in the germanit is distilled in a mixture of acids and becomes tetrachloride.

Gallium (Ga, valence 1 - 3, atomic weight 69.72)

The crude material from which the gallium is extracted is imported from Communist China.

Thallium (Th, valence 1 and 3, atomic weight 204.39)

Thallium is extracted from crookesite [redacted] 50X1-HUM

Various Arsenides

(Smaltite - Co As_2

Chloanthite - Ni As_2

Copper-nickel alloy - Ni_2 As_2

As - valence 3 and 5, atomic weight 74.91)

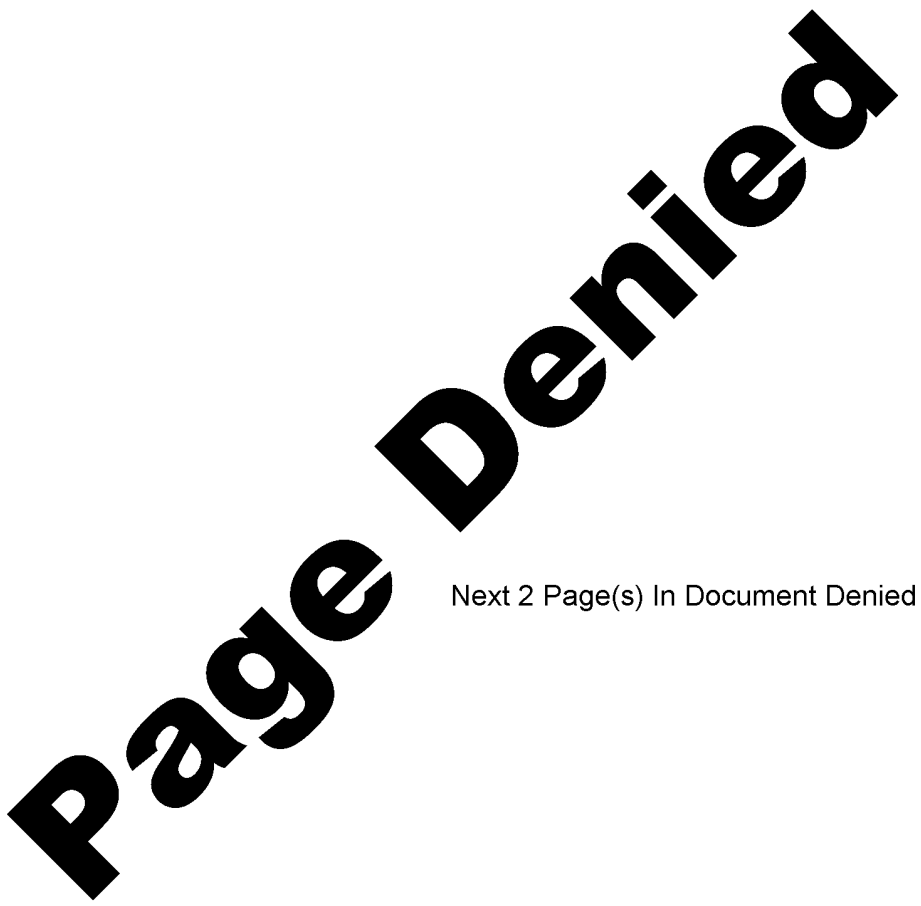
The arsenides are produced by the East German chemical industry. These materials are used in various combinations for the production of semi-conductors. Among others, such compounds are:

gallium-arsenite-silicon
gallium-arsenite-germanium
germanium-arsenite-silicon

Particular value is placed on

Ga_2 03 + Ni_2As_2 and

Ga_2O + Ni_2As_2 as well as on other compounds of gallium and arsenide.



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